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Petroleum Dry Cleaners: Background Information for Promulgated Standards Volume 2. Final Environmental Impact Statement

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Standards of Performance for the control of VOC emissions from petroleum dry cleaning facilities have been proposed under the authority of Section 111(b) of the Clean Air Act. These standards apply to new, modified, or reconstructed petroleum dry cleaning facilities, the construction or modification of which began on or after the date of proposal. This draft document contains response to comments received on the proposed standard and a summary of the changes made in the standard prior to promulgation.

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Petroleum Dry Cleaners - Background Information for Promulgated Standards

Emission Standards and Engineering Division

U.S ENVIRONMENTAL PROTECTION AGENCY
Office of Air, Noise, and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

September 1984

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1. SUMMARY

On December 14, 1982, the Environmental Protection Agency (EPA) proposed standards of performance for petroleum dry cleaners (47 FR 56118) under authority of Section 111 of the Clean Air Act. Public comments were requested on the proposal in the Federal Register. There were four commenters composed mainly of industry trade association representatives and State and local regulatory agencies. Also commenting was one equipment manufacturer. The comments that were submitted, along with responses to these comments, are summarized in this document. The summary of comments and responses serves as the basis for the revisions made to the standard between proposal and promulgation.

1.1 SUMMARY OF CHANGES SINCE PROPOSAL

In response to the public comments and as a result of reevaluation, certain changes have been made in the proposed standards. The equipment specifications and operating procedures determined to be the best technological system of continuous emissions reduction have not changed. The installation of solvent recovery dryers and the identification and repair of solvent leaks remains the basis for the standard. However, several changes have been made in the applicability provisions of the standard.

First, the definition of affected facilities was changed. Small plants are now exempted on the basis of the total manufacturers' rated capacity of the petroleum solvent dry cleaning dryers at the plant, rather than on the basis of the annual solvent consumption. This revised definition is equivalent, in terms of potential impacts on the petroleum solvent dry cleaning industry, to the definition in the proposed standard. Only the format of the exemption was changed. The affected equipment types (i.e., dryers, filters, stills, and settling tanks) remain the same.

Second, a subsection was added to the definition of affected facilities to clarify which dryers should and should not be considered in calculating the total manufacturers' rated dryer capacity of the plant for the purposes of comparison with the dryer capacity exemption level. Clarification was needed to ensure that permanently retired dryers are not considered in determining the total dryer capacity of the plant.

Finally, the recordkeeping requirement to document and maintain the calculation of annual petroleum solvent consumption of the dry cleaning plant was eliminated. The change in the definition of affected facilities obviates the need for this requirement.

1.2 SUMMARY OF IMPACTS OF PROMULGATED ACTION

1.2.1 Alternatives to the Promulgated Action

The regulatory alternatives are discussed in Chapter 6 of Volume I of the background information document (Volume I BID) for the proposed standards (EPA-450/3-82-012a). These regulatory alternatives reflect the different levels of emission control that were analyzed in determining best demonstrated technology, considering costs, nonair quality health, and environmental and economic impacts for petroleum dry cleaners. These alternatives remain the same.

1.2.2 Environmental Impacts of the Promulgated Action

The environmental impacts resulting from the proposed standard are described in Chapter 7 of the Volume I BID. No changes in these impacts have occurred since the standard was proposed.

1.2.3 Energy and Economic Impacts of the Promulgated Action

Energy and economic impacts resulting from the standard are discussed in Chapters 7 and 9 of Volume I of the BID, respectively. No changes in these impacts have occurred since the standard was proposed.

1.2.4 Other Considerations

1.2.4.1 Irreversible and Irretrivable Commitment of Resources. The regulatory alternatives defined in Chapter 6 of Volume I of the BID would not preclude the development of future control options nor would they curtail any beneficial use of resources. The alternatives do not involve short-term environmental gains at the expense of long-term environmental losses. The alternatives yield successively greater short- and long-term environmental benefits, with the alternative upon

which the final standards are based providing the greatest benefits. Further, none of the alternatives result in the irreversible and irretrievable commitment of resources. No changes in these considerations have resulted since proposal of the standard.

1.2.4.2 Environmental and Energy Impacts of Delayed Standards. As discussed in Chapters 1 and 7 of Volume I of the BID, delay in the standard would cause a similar delay in realizing the beneficial impacts associated with the standard. No changes in the potential effects of delaying the standard have occurred since proposal.

1.2.4.3 Urban and Community Impacts. Urban and community impacts of the proposed standard are discussed in Chapter 9 of Volume I of the BID. No changes in these impacts have occurred since the standard was proposed.

2. SUMMARY OF PUBLIC COMMENTS

A total of four (4) letters commenting on the proposed standard and the background information document were received. A public hearing was not requested, and consequently no public hearing was held. A list of the commenters, their affiliations, and the EPA docket numbers assigned to their correspondence is given in Table 2-1.

For the purpose of orderly presentation the comments have been categorized under the following topics:

1. Safety of Solvent Recovery Dryers;
2. Selection of the Source Category;
3. Applicability and Selection of the Affected Facility;
4. Projection of Affected Facilities;
5. Economic Impact; and
6. Test Methods and Procedures.

The comments, the issues they address, and responses to each comment are discussed in the following sections of this document.

2.1 SAFETY OF SOLVENT RECOVERY DRYERS

2.1.1 Comment: (IV-D-3) One commenter questioned the safety of solvent recovery dryers, which are required by the proposed standard to control emissions of volatile organic compounds (VOC) from dryers. He acknowledged that the question had been investigated early in the standard development process. At that time, the safety of the recovery dryer was adequately demonstrated by industry operating experience and Factory Mutual Research Corporation's certification that the technology conformed to the National Fire Protection Association's guidelines. However, since proposal of the standard, an explosion of a solvent recovery dryer occurred. The commenter requested, therefore, that no action to finalize the standard be taken until this incident had been fully investigated.

Table 2-1. LIST OF COMMENTERS ON PROPOSED STANDARDS FOR THE PETROLEUM DRY CLEANING INDUSTRY

Docket Item Number[a]	Commenter and Affiliation
IV-D-1	Stanley Rosenthal Washex Machinery Corporation 5000 Central Freeway Wichita Falls, TX 76306 Date: January 6, 1983
IV-D-2	Daniel J. Goodwin Division of Air Pollution Control Illinois Environmental Protection Agency 2200 Churchill Road Springfield, IL 62706 Date: February 10, 1983
IV-D-3	Timothy A. Vanderver Patton Boggs & Blow 2550 M Street, NW Washington, D.C. 20037 Date: March 8, 1983 (Comments submitted on behalf of the Internal Fabricare Institute, Institute of Industrial Launderers and the Textile Rental Services Association of America)
IV-D-4	Judith M. Lake Air Pollution Control District County of San Diego 9150 Chesapeake Drive San Diego, CA 92123 Date: March 4, 1983

[a]The docket number for this project is A-80-2. Dockets are on file at EPA Headquarters in Washington, D.C. and at the Office of Air Quality Planning and Standards in Durham, N.C.

Response: The use of both solvent recovery and conventional dryers presents risks of explosions or fires because petroleum solvent is a highly flammable liquid. Petroleum dry cleaners minimize these incidents by removing metal articles and other objects that might ignite the solvent from clothes prior to dry cleaning. However, when the solvent does ignite, fires tend to occur in conventional dryers while minor explosions tend to occur in solvent recovery dryers. This latter tendency led to a careful evaluation of solvent recovery dryer safety before the standards of performance were proposed. The investigation identified 19 cases of solvent recovery dryer explosions. However, in each of these cases the safety features designed into the solvent recovery dryer had safely vented the explosion with only minor damage to the dryer itself.

Factory Mutual Research Corporation's certification for insurance underwriting that solvent recovery dryers complied with the National Fire Protection Association's code in combination with industry operating experience indicated that the safety of recovery dryers was adequately demonstrated to consider them as a basis for standards of performance. As discussed in the Federal Register at proposal, however, decisions concerning safety are in the hands of safety officials, and standards of performance will not require the use of any device safety officials consider unsafe.

Since proposing the standard, two cases of solvent recovery dryer explosions have occurred (see Docket Items IV-B-1 and IV-B-2). These incidents differ from those investigated before proposal of the standards because the force of these explosions reportedly caused the loading door assembly panel to break away from the dryer. The detached panels, weighing about 300 to 400 pounds, were found at a distance of 8 to 10 feet from the dryers.

The domestic recovery dryer manufacturer and Factory Mutual Research Corporation were asked to investigate these explosions and comment on whether their previous judgements concerning the safety of solvent recovery dryers have changed in light of their findings. Both the manufacturer and Factory Mutual Research Corporation agreed to do so.

The manufacturer's response maintains that solvent recovery dryers are safe when operated in conformance with National Fire Protection

Association (NFPA) codes (Docket Items IV-D-6 and IV-D-10). In addition, the following comments were made:

1. Attention must be paid by operators to ensure proper maintenance of the equipment;
2. The inspection of garments prior to cleaning to remove possible sources of ignition (i.e. butane lighters, metal objects, etc.) is of the utmost importance to safe operation; and
3. The manufacturer is in the process of developing a front panel locking assembly to assure additional machine integrety in the event of explosion due to improper maintenance or inspection techniques.

The Factory Mutual Research Corporation also responded by re-testing commercially available solvent recovery dryers under explosion conditions (Docket Item IV-D-11). Unlike the solvent recovery dryers originally tested, the dryers involved in this testing were equipped with casing front restraining devices. Moreover, the testing procedure employed a propane/air mixture (rather than a Stoddard solvent/air mixture) to produce the explosion. Based on the results of the tests, Factory Mutual concluded that the solvent recovery dryer design (including the casing front restraining device) meets NFPA codes. Factory Mutual further indicated that the casing front restraining device, which provides additional strength to the front of the dryer casing, will be an approval requirement for new solvent recovery dryers.

In light of this review of the safety of solvent recovery dryers and the conclusions drawn by both the manufacturer of this dryer and Factory Mutual Research Corporation regarding its safety, the basis of the promulgated standards remains the use of solvent recovery dryers.

2.1.2 Comment: (IV-D-3) One commenter speculated that the installation of solvent recovery dryers in certain limited circumstances can be prohibited by the responsible State or local safety official. Further, the standard, which mandates the use of solvent recovery dryers to the exclusion of conventional dryers, could place an existing facility in the "untenable position" of having no equipment options that would satisfy both the requirements imposed by the standard and the restraints imposed by the safety official. To allow an existing plant that finds itself in this situation the opportunity to expand or to replace equipment,

the commenter requests that a variance provision be included in Section §60.622(a) that exempts an existing facility from the solvent recovery dryer requirement if the installation of solvent recovery dryers is prohibited by the responsible safety official.

Response: It is unlikely that an owner or operator of a dryer affected by the new source performance standards would be placed in the untenable situation described by the commenter. A survey of insurance underwriters and fire marshals conducted before the standards were proposed, identified no incident where the installation of a solvent recovery dryer was prohibited because it was considered to be unsafe. Moreover, a clearly defined procedure exists for determinations of equipment safety. In the case of dry cleaning equipment, industry and national safety experts under the auspices of the National Fire Prevention Association (NFPA) develop standards or codes for the purpose of ensuring safe plant and equipment operation. These codes for dry cleaning are set forth in NFPA standard No. 32 as revised in 1979. Actual equipment designs are evaluated against the NFPA standards by the Factory Mutual Research Corporation underwriters laboratory, which certifies equipment as meeting the requirements of the NFPA codes. On a local, or case by case basis, the enforcement of safety requirements such as the NFPA codes are the purview of local safety officials. Because the solvent recovery dryer has been certified as meeting the NFPA code and included by the Factor Mutual Research Corporation on the list of equipment that is approved for insurance underwriting, it is unlikely that local officials would prohibit installations of the dryers.

2.2 SELECTION OF THE SOURCE CATEGORY

2.2.1 Comment: (IV-D-3) One commenter questioned the need for a standard at all in light of the favorable economic incentives that have been estimated to exist with the installation of solvent recovery dryers. The commenter asserted that if the cost estimates in the Volume I BID and preamble are correct, the "economic considerations will insure the installation of recovery dryers in virtually every situation in which the regulation might require it". He further asserted that the remaining requirements of the standard (i.e., cartridge filters and leak detection) by themselves do not have sufficient environmental impact to justify rulemaking. On this basis, the commenter requests a review of the entire rulemaking docket to ascertain whether rulemaking is needed.

Response: While economic incentives for the installation of solvent recovery dryers do exist, these incentives are not sufficient to ensure the application of solvent recovery dryers. Although solvent recovery dryers in most situations will produce a cost savings in comparison to the use of a conventional dryer, their installation requires a capital investment that is greater than that for a conventional dryer by a margin that is significant in terms of the working capital available to most dry cleaning establishments. Without the new source performance standard, an owner or operator considering expansion may elect not to make the additional investment required for a solvent recovery dryer because of the additional financial obligation. Alternately, the rate of return for the solvent recovery dryer may not be attractive for the given situation or may be less attractive than that for alternate investment opportunities. Complicating this decision process is the fact that knowledge of the savings associated with solvent recovery dryers is not universal among dry cleaning operators. Consequently, many owners or operators may not be aware of the economic incentive for selecting solvent recovery dryers. For these reasons, standards of performance for petroleum dry cleaners are necessary to ensure reductions in VOC emissions from petroleum dry cleaning plants.

The cartridge filter and leak detection requirements of the standard, irrespective of the solvent recovery dryer requirement, result in beneficial environmental impacts. Cartridge filters emit less than diatomite filters by about 4 to 9 pounds of solvent per 100 pounds of clothes cleaned. This compares with the 10 to 25 pounds per 100 pounds of clothes cleaned emissions reduction obtained from the use of a solvent recovery dryer in lieu of a conventional dryer (Reference BID, Volume I). Emissions reductions from solvent leaks in equipment and other fugitive emissions units covered by the leak detection and repair provisions cannot be directly measured; however, these losses have been roughly estimated to be 1 pound per 100 pounds of clothes cleaned. Contrary to the assertion of the commenter, the resultant environmental benefits from emissions reductions from the cartridge filter and leak detection requirements are considered to be significant. For this reason, they were and continue to be incorporated into the petroleum dry cleaning standard.

2.3 APPLICABILITY AND SELECTION OF THE AFFECTED FACILITY

2.3.1 Comment: (IV-D-3) One commenter expressed concern that the applicability section of the proposed standards could be interpreted to mean that the standard applies to used equipment and that in this way the standard would preclude the installation of used equipment (namely used conventional dryers and diatomite filters) as a low cost alternative for small plants to replace failing equipment. In the commenter's view "the Clean Air Act provides no basis for attempting to apply new source standards to such used equipment." The commenter requested that used equipment be specifically excluded from the effects of the standard and language be included in the preamble to the promulgated standard to clarify that equipment can be used at different locations without triggering new source performance standard requirements.

Response: The petroleum dry cleaning standards, as with all new source performance standards, apply only to newly constructed, modified and reconstructed affected facilities. A piece of used equipment constitutes an "existing facility" that is not affected by the standard unless it is "modified" or "reconstructed" as defined in the general provisions applicable to all new source performance standards (Reference 40 CFR 60.14 and 60.15, respectively). The simple relocation of existing equipment does not constitute modification or reconstruction. Briefly, a modification is triggered by a physical change or a change in the method of operation of an existing facility that requires a capital expenditure and also results in an increase in emissions. Reconstruction occurs when an existing facility is refurbished and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility. In addition, a reconstructed facility is subjected to the standards only on a case-by-case basis depending on a judgement that it is technologically and economically feasible to meet the standard. Applicability decisions must be made considering the facts and circumstances of each individual case.

2.3.2 Comment: (IV-D-2) One commenter questioned the selection of the factor (56 gallons of solvent per pound of manufacturer's rated dryer capacity) that is used in the definition of affected facilities to determine if new plants are subject to the standards. He felt that the

factor should be derived from the model plant parameter data included in Table 6-1 of the Volume I BID by averaging the solvent use per unit of dryer capacity estimates for the various model plant types affected by the standard. Based on this approach, the commenter proposed a factor of 59 gallons of solvent per pound of manufacturers' rated dryer capacity for use in the definition of the affected facilities. He noted that the basis for the 56 gallons of solvent per pound of dryer capacity factor was not documented in the Volume I BID or the preamble to the proposed regulation.

Response: The emission factor used to project the annual solvent consumption rate for proposed new plants is based on the model plant parameter data summarized in Table 6-1 of the Volume I BID. However, rather than averaging the estimates of solvent use per unit of dryer capacity over the range of model plant types potentially affected by the standard, as suggested by the commenter, the factor is based on the model plant parameters for the type and size of plant that is at or just above the borderline between exempted and nonexempted plants. This approach better insures a factor that is representative of the small plants that will be affected by the standard. The factor will be less representative of large plant operations, but this is of little consequence because these plants clearly will be subject to the standard.

The methodology used in developing the factor was not laid out in either the Volume I BID or the Preamble. Instead, it is explained in the docket (see Docket Item II-B-50). In brief, the approach was to calculate the factor directly from the daily and annual plant operating data for the large commercial model plant (i.e. 9 loads per day; 250 days per year from Table 6-1), and assumptions on the minimum average washer load weight common to this plant size (70 percent of capacity), the emission rate per unit of clothes cleaned (23 pounds solvent per 100 pounds of clothes) and the solvent density (6.5 pounds per gallon).

In principle, this approach is similar to that recommended by the commenter. The only significant difference is that the derivation focuses on the model plant most representative of those which the small plant exemption applies rather than the average of the range of plant types potentially affected by the standard.

2.3.3 Comment: (IV-D-3) One commenter expressed agreement with some aspects of the small plant exemption that is incorporated into the standard and disagreement with other aspects of the exemption. He agreed that it is appropriate to have a small plant exemption and that it is necessary to differentiate among new, replacement, and expanding facilities in setting the exemption level. Also, he agreed with the basic methodology employed in developing the plant size for the exemption.

However, he disagreed with other aspects of the exemption level and felt that adjustments must be made to make it workable. Four adjustments to the exemption level were requested.

First, the commenter suggested that the exemption level (4,700 gallons per year based on a 132,170 pound of articles cleaned per year plant throughput level) should be calculated using a solvent consumption rate of 30 pounds per 100 pounds of articles cleaned instead of the 23 pound per 100 pound rate used in the proposed standard. The resulting adjusted exemption level (6,106 gallons of solvent per year) would be indicative of a plant that employs a conventional dryer and a diatomite filter rather than a plant with a conventional dryer and a cartridge filter (the basis for the 23 pound per 100 pound solvent consumption rate). The concern with the use of the 23 pound per 100 pound solvent consumption rate is that it presumes the universal use of cartridge filters, which are proposed by the standard, but not yet universally employed in the industry. In further support of his contention that the 23 pound per 100 pound factor is inappropriate, he pointed out that cartridge filters represent an additional capital investment not considered in the economic analysis that determined the plant throughput level (132,170 pounds of articles cleaned per year) used in calculating the solvent exemption level.

Second, the commenter asked that the exemption level for new dry cleaning plants be expressed in terms of the total manufacturer's rated dryer capacity of the plant. This format is simpler and easier to understand than the plant-wide solvent consumption rate format used in the proposed standard. Further, because actual dryers are manufactured in discrete 50 and 100 pound capacity sizes, the commenter argues that the 4,700 gallons per year exemption level (roughly equivalent to an 84 pound dryer capacity exemption level) is only exempting the 50 pound

capacity dryers. Consequently, the 4,700 gallons per year exemption level is actually a 2,800 gallons per year exemption level. He requests that the exemption level be set at a total dryer capacity of greater than 110 pounds, based on a solvent consumption rate of 6,100 gallons per year.

Third, the commenter requested that the exemption for existing dry cleaning plants that are replacing dryers with dryers of the same capacity be 110 pounds of dryer capacity. That is, only those plants that are replacing more than 110 pounds of capacity should be affected by the new source performance standard.

Fourth, the commenter requested that the exemption for existing plants that are expanding their dry cleaning capacity also be 110 pounds of capacity. That is, only those plants that are adding more than 110 pounds of capacity (i.e., the combined capacity of the proposed new units) should be affected by the new source performance standard.

Response: The first concern raised by the commenter over the small plant exemption level is the selection of the 23 pounds of solvent per 100 pounds of articles cleaned emission factor used in calculating the 4,700 gallons of solvent per year exemption level. The factor is actually a total emission factor comprised of component emission factors for the various types of dry cleaning equipment that exist at a particular plant. Therefore, the selection of a factor implies the selection of the equipment employed at the plant for which the factor applies. Consequently, the selection of the most appropriate factor translates into the selection of the particular equipment that is most representative of a plant under consideration for exemption.

The commenter contends that diatomite filters rather than cartridge filters should be considered because the cartridge filter is not yet universally employed in the industry and, further, the cartridge filter represents an additional capital investment not considered in estimating the clothes throughput breakeven level (132,170 pounds). The emission factor representative of a plant with a diatomite filter is 30 pounds per 100 pounds of articles cleaned. This compares to the 23 pound per 100 pound factor used in developing the proposed exemption level.

Based on estimates received from an industry trade association representative, the ratio of cartridge filter users to diatomite filter

users is estimated to have been 50/50 in 1980 and is increasing with time. Consequently, the assumed use of cartridge filters and the resulting 23 pounds of solvent per 100 pounds of articles cleaned emission factor are the most appropriate assumptions that can be made in calculating the small plant exemption level for new and existing plants.

The commenter's point about the capital investment of cartridge filters not being considered in determining the exemption level requires clarification. The exemption level determines the clothes throughput required to generate sufficient solvent savings (due to the higher degree of emissions control) to offset the additional annualized cost of a solvent recovery dryer over that of a conventional dryer. The type of filter used does not affect these cost differentials between solvent recovery dryers and conventional dryers. For this reason, the additional capital costs and emissions reductions associated with cartridge filters were not considered in determining the exemption level.

The second concern raised by the commenter is that the exemption level should be expressed in terms of dryer capacity rather than solvent consumption because it is simpler and easier to apply. The solvent consumption format for the exemption level was established in response to industry comments received at the National Air Pollution Control Techniques Advisory Committee (NAPCTAC) meeting in December 1981. As expressed at that time, the primary concerns of the industry were that the exemption level should be: easily understood; unambiguous; and based on a parameter that already exists at the plants, rather than a parameter that requires additional monitoring and recordkeeping. The industry felt that annual solvent consumption met these requirements and, as a result, recommended the use of an exemption expressed in terms of annual solvent consumption.

It is clear, however, that an exemption expressed in terms of dryer capacity is better than one expressed in terms of annual solvent consumption. Compared with solvent consumption, dryer capacity requires substantially fewer recordkeeping requirements. The manufacturer's rated capacity is either stamped on the name plate of each individual piece of equipment or readily available from the equipment specifications provided by the manufacturer. The determination of whether the standard applies to a particular facility is made by simple comparison of the

rated capacity for the proposed unit (or collective capacities for proposed multiple unit installations) to the applicability criterion. The approach is straightforward and easily verifiable. It also is simpler because no projection of expected future solvent use is required as with solvent consumption. For these reasons, the exemption contained in the final standard is structured in terms of dryer capacity.

The exemption level is now 84 pounds of manufacturer's rated dryer capacity. This capacity is derived directly from the 132,170 pounds of clothes cleaned per year breakeven level established in the economic analysis (see derivation in Docket Item No. IV-B-3) and is equivalent to the 4,700 gallon per year solvent consumption exemption level in the proposed standard.

The derivation involves assumptions about average or typical operating schedules and load factors (i.e., days per year, loads per day and the ratio of actual load weight to rated capacity). However, because the economic breakeven level analysis inherently incorporates a substantial margin for error (i.e., at the breakeven level, the additional costs of the solvent recovery dryer are offset by its savings), the standard will not endanger the economic viability of affected dry cleaners. Selection of the 84 pound manufacturers' rated dryer capacity criterion, therefore, is reasonable and sufficient to mitigate any adverse economic impacts that could result from the new source performance standard.

The commenter asserted that a dryer capacity exemption level of greater than 110 pounds should be established primarily on the basis of his suggested 6,100 gallon per year solvent consumption level derived with the 30 pounds per 100 pounds of clothes cleaned emission factor discussed previously. For the reasons outlined in the previous discussion of this commenter's first concern on the 23 vs 30 pounds per 100 pounds factors, the 23 pounds per 100 pounds factor and the resulting 4,700 gallons of solvent or 84 pounds of dryer capacity exemption levels are more appropriate.

The commenter further asserted that because dryers are manufactured in discrete 50 and 100 pound capacity sizes, the 4,700 gallons of solvent consumption exemption affects only the 50 pound dryers. The exemption, therefore, realistically represents only a 2,800 gallon per year solvent consumption level and should be established at the 110 pound dryer

capacity level which is equivalent to an annual solvent consumption of 6,100 gallons.

Decisions regarding the capacity of dryers to be sold are made by manufacturers to address a number of changing operating and market considerations. It may be that the capacities of dryers marketed in the future will differ from those available today. For instance, a 75 pound capacity dryer may be introduced into the market. Given the potential for change in the character of the dry cleaning industry with its many small operators, the dryer capacity exemption should be established at whatever level the economic breakeven analysis indicates is appropriate and not arbitrarily increased to exempt dryers larger than the analysis indicates is reasonable. Further, an exemption level of 110 pounds dryer capacity would exempt the majority of commercial dry cleaning plants. Typically these plants have a total dryer capacity of 100 pounds. Thus, a 110 pound dryer capacity exemption level would inappropriately exempt a large number of commercial dry cleaners that the analysis indicates could afford the cost of controls. For these reasons, the 84 pound dryer capacity is selected as the exemption level.

The commenter also requested that the applicability of the standard to expansions or replacement of equipment at existing facilities be determined by comparing the capacity of the new and/or replacement dryers to the 110 pound capacity limit. Irrespective of whether a 110 or an 84 pound dryer capacity level is selected, this approach differs considerably from the exemption level in the proposed standard. Applicability of the standard is based on the economic breakeven level for the plant. The exemption, therefore, is the plant dryer capacity, not the capacity of an individual dryer. In other words, total existing or projected dryer capacity of the plant is compared to the exemption level, not the capacity of an individual dryer as suggested by the commenter. Because the exemption is based on the ability of the plant to afford control technology, the exemption must reflect the size and throughput of the plant. Consequently, total plant dryer capacity is the basis for the exemption. Recognizing, however, that plants may have idle equipment that should not be included, provisions have been made to exclude from consideration those units that have been retired or otherwise permanently removed from service.

2.3.4 Comment: (IV-D-4) One commenter suggested that the standard should include requirements for improving vacuum still operations. However, no suggested requirements or guidelines were identified by the commenter.

Response: As discussed in the preamble to the proposed standard, fugitive VOC emissions result from the storage and open-air disposal of the waste liquid (grease, oil, solvent soluble impurities and residual solvent) generated by vacuum still operations. Moreover, various still operating procedures can be employed that reduce the solvent content of still wastes and thereby reduce VOC emissions. However, still operating procedures to minimize the solvent remaining in the still wastes vary with solvent throughput, fabrics, soil loading and still type. As a result, no still operating procedures have been identified that would result in consistent reductions in the solvent content of vacuum still wastes. Covering any containers of such wastes, however, would reduce fugitive emissions from these wastes. In addition, the identification and repair of leaks in the vacuum still and associated pipe work will further reduce emissions. These types of fugitive emissions control techniques are addressed by the facility inspection requirements of the standard.

2.4 PROJECTION OF THE NUMBER OF AFFECTED FACILITIES

2.4.1 Comment: (IV-D-3) One commenter felt that the projections of the numbers of dryers to be installed over the next five years are too high and result in an overestimation of the emissions reductions to be derived from the standard. He pointed out that supporting data for the projections have not been documented. Further, he felt that the projections should be revised and that the best basis for revising the estimates is data on the number of conventional dryers sold over the last five years. The commenter expressed the opinion that, because such data should be an important part of the rulemaking record, the standard should not be promulgated until the data can be gathered by the trade associations.

Response: The projections of the number of affected facilities are based on an anticipated one percent annual growth rate in the industrial dry cleaning sector, zero growth in the commercial dry cleaning sector, and the assumed replacement of existing equipment with new equipment at

the end of a 30-year equipment life. Replacement units comprise a large fraction of the projected affected facilities. The growth rate and equipment life assumptions are based on conversations with about 20 dry cleaning operators, equipment manufacturers, and trade association representatives. These conversations are documented and contained in the docket. The reported lifetimes for petroleum dry cleaning equipment ranged between 10 years and 30 years or more. Based on these estimates, a conservative selection of 30 years was used as the average lifetime of existing equipment.

The commenter contends that the projections are too high and recommends that they be revised based on the number of conventional dryers that have been sold over the last five years. Conventional dryer sales, however, are not the most appropriate basis for the projections. This is because sales of conventional dryers have been depressed severely in recent years. Thus, reasonable projections of dryers that will be affected by the new source performance standard cannot be based on conventional dryer sales.

Industry trade association representatives indicate that due to the general economic conditions, operators over the last decade have been postponing purchases of new dry cleaning equipment and opting to maintain existing equipment (Docket Entry II-E-149). The last decade or so has also seen a decline in the petroleum dry cleaning industry because the public's tastes have turned towards "wash and wear" fabrics. Also, sharp increases in the cost of petroleum solvent have contributed to the downward trend in sales of conventional dryers that exhaust the evaporated solvent directly to the atmosphere. However, industry analysts believe that the attrition in the number of dry cleaners observed during the past decade has run its course and that the industry has stabilized. This trend, coupled with recent favorable decreases in the cost of borrowing capital, indicates that the future outlook for the industry is considerably brighter than the recent past.

The full effects of these influences are difficult to determine over the short run. However, in the long run the commercial dry cleaning sector will probably continue to operate at its present level; the industrial dry cleaning sector will probably experience slight growth, and purchases of new equipment cannot be postponed indefinitely.

Consequently, over the long run, the projections of affected facilities in the Volume I BID are reasonable.

2.5 ECONOMIC IMPACT

2.5.1 Comment: (IV-D-1) One commenter, a manufacturer of petroleum dry cleaning equipment, stated that petroleum dry cleaning equipment sales and prospects for future sales had declined during the last seven years to the point where the manufacturer has discontinued production of petroleum solvent and dual-phase washer/extractors and diatomite filters. Accordingly, he indicated that Section 9.1.2 of the Volume I BID should be revised to delete their company from the lists of manufacturers of this equipment. Further, he felt that there is no longer a replacement market for petroleum solvent dry cleaning equipment. The decline in the equipment market was attributed by the commenter to the development of standards of performance for petroleum dry cleaners.

Response: While the decline in petroleum dry cleaning sales experienced by the commenter is coincident in time with the development of standards for dry cleaners, the standards development process has not had a significant effect on the commenter's sales.

The first major public involvement in the development of the standard occurred at the August 10, 1976, meeting of the National Air Pollution Control Techniques Advisory Committee (NAPCTAC) (see Docket Item IV-B-46). At this meeting, "good housekeeping" practices for reducing petroleum solvent losses from petroleum solvent washers and diatomite filters were discussed. These practices focused on minimizing leaks of petroleum solvent and recovering petroleum solvent contained in used diatomite filters. Discussion of these practices would not have affected the sale of the commenter's petroleum solvent dry cleaning equipment.

The new source performance standard for petroleum solvent dry cleaners was proposed in the Federal Register on December 14, 1982. The standards would affect new petroleum solvent dry cleaning equipment that is manufactured after December 14, 1982. Consequently, it is not clear how the proposed standards could have had an impact on the commenter's sales over the preceding seven years.

The standards would preclude the use of new diatomite filters in some cases. The standards, however, would not apply in any way to the items of petroleum solvent dry cleaning equipment mentioned by the

commenter. The proposed standards, therefore, would not have any impact on the sale of these items of equipment.

The impact of the proposed standards on the sale of new diatomite filters is mitigated by the fact that the standards would not apply to small petroleum solvent dry cleaners. Small dry cleaners constitute about half of the petroleum solvent dry cleaning industry and generally use diatomite filters instead of cartridge filters. Large dry cleaners, on the other hand, generally use cartridge filters. Due to the economic benefits associated with the use of cartridge filters, however, the major trade associations and many equipment manufacturers have urged all petroleum solvent dry cleaners to purchase this type of filter instead of diatomite filters.

As mentioned previously in responding to the comment in Section 2.4.1, the petroleum drycleaning industry has declined during the last decade due to the combined influence of the public's increased use of "wash and wear" fabrics and a sharp increase (about 500 percent) in the cost of petroleum solvent. The number of petroleum dry cleaners has steadily declined, and the market for replacement equipment during this period has been impacted by hesitancy on the part of operators about the future of the industry. In the last five years, the high cost of borrowing funds for capital improvements also has restricted the market for replacement equipment. While petroleum solvent dry cleaners are now recovering to some extent from these impacts, the recovery is not without change within the industry. The number of petroleum solvent dry cleaners has steadily declined, with a consequent reduction in the replacement market for new petroleum solvent dry cleaning equipment.

In such circumstances, sales of new petroleum solvent dry cleaning equipment would be expected to decline sharply. The commenter's decline in sales is the result of the influences described above and the general decline in the petroleum dry cleaning industry, rather than the direct result of the new source performance standard as he asserts.

It is also not true that there is no longer a replacement market for petroleum dry cleaning equipment. Although sales during the last few years are down, the indication from the industry trade association representatives is that the purchase of new equipment has been delayed because of the declining petroleum dry cleaning market conditions. As

documented in the Volume I BID and expressed in the response to the comment in Section 2.4.1, the commercial dry cleaning sector will probably maintain itself at the current level; the industrial dry cleaning sector will probably experience slight growth; and existing dry cleaning equipment cannot last indefinitely. Consequently, a market will exist for new dry cleaning equipment in replacement situations and to a lesser extent in new or expanding industrial plant situations.

2.6 TEST METHODS AND PROCEDURES

2.6.1 Comment: (IV-D-4) One commenter felt that the initial, one-time-only test requirement to determine the dryer cycle time necessary to achieve a 0.05 liter per minute recovered solvent flow rate is inadequate to provide proof of long-term efficient operation. The test method does not detect mechanical malfunctions that influence the solvent recovery efficiency and the emission rate. Second, in the opinion of the commenter, the test should be repeated annually, at a minimum, to ensure the continued performance of the solvent recovery equipment. Also, the commenter pointed out that no maintenance procedures are specified to ensure the continued efficient operation of the dry cleaning equipment.

Response: More frequent and thorough testing and reporting requirements and enforcement provisions could be incorporated into the proposed petroleum dry cleaning standards. However, an increase in the testing and reporting requirements also increases the burden on the owner or operator of the dry cleaner. Because the dry cleaning industry by and large is made up of small businesses that do not have the resources to conduct and record tests, this burden on the owner or operator has been minimized. The 0.05 liter per minute recovered solvent flow rate test for the recovery dryer is designed to determine the most cost effective and emissions reduction effective dryer cycle time. Once the equipment is installed and the optimum dryer cycle time is determined, the operator has an economic incentive to operate the equipment in the most solvent-efficient manner.